

Left Colic Angle Volvulus Pressing the Spleen: A Case Report from the Yopougon University Hospital (Abidjan, Ivory Coast)

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Abstract

Colonic volvulus is the torsion of the colon around its mesentery, which generally occurs at the level of the sigmoid colon and the caecum in 60 to 75% and 25 to 40% of cases, respectively. In contrast, volvulus of the splenic flexure is rare, occurring in only 1% of cases. We report a rare case of volvulus of the splenic flexure of the colon involving the spleen. The patient was a 54-year-old man with chronic constipation who had undergone a laparotomy for acute intestinal obstruction 11 years prior. The examination revealed an obstructive syndrome. Further investigation revealed a volvulus of the left colic flexure involving the spleen in its torsion, with necrosis of the splenic flexure but no perforation. We performed a high segmental colectomy with splenic loop and splenopexy. Splenic angle volvulus is a rare cause of colonic obstruction, and its location around the spleen makes it exceptional. Hence, the importance of our study is to improve its management.

Keywords: Left colic angle, Obstruction, Volvulus, Spleen

Introduction

Colonic volvulus, the twisting of the colon around its mesentery, generally occurs at the sigmoid colon and the caecum in 60–75% and 25–40% of cases, respectively (Umbu 2022, Perrot 2016). In contrast, volvulus of the splenic flexure is rare, found in only 1% of colonic volvulus cases (Umbu 2022, Ballantyre 2023). The colic flexure is typically attached to the diaphragm and abdominal wall by the phrenicocolic ligament, the gastrocolic ligament, and the left Toldt's fascia. Previous abdominal surgery and fixation abnormalities play a significant role in the pathogenesis (Ballantyre 2023). The literature reveals few cases, with fewer than 100 reported (Amirsina 2021); however, no involvement of the spleen in volvulus has been reported, due to its fixation within its fossa by the posterior mesogastrium and the sustentaculum. Lengthening of the pedicle is a necessary but not sufficient condition for the development of this phenomenon; however, other anatomical factors also play a role. We report a rare case of volvulus of the splenic angle of the colon encompassing the spleen, discovered incidentally during the management of a colonic obstruction at the Angré University Hospital, which presented us with diagnostic and therapeutic challenges.

Case Report

This was a 54-year-old patient with a history of chronic constipation and a midline laparotomy for acute intestinal obstruction 11 years prior. He presented with sudden, intense, sharp abdominal pain that had been progressively worsening for 72 hours, associated with a complete cessation of bowel movements and early flatulence. There was no vomiting, gastrointestinal bleeding, or weight loss. Furthermore, the symptoms occurred in the context of an unspecified fever. The examination revealed stable hemodynamic parameters (BP = 103/66 mmHg, Pulse = 94 bpm, RR = 20 breaths/min, SaO₂ = 93%) and temperature = 38.3°C. The abdomen was distended with significant diffuse bloating, immobile, over a midline laparotomy scar, and moderate tenderness predominantly in the left flank, elastic resistance, diffuse tympany, and an empty rectal ampulla; there were no signs of peritoneal irritation. The remainder of the examination was normal. A plain abdominal X-ray (a full-abdomen standing view), combined with a chest X-ray, showed a few air-fluid levels in the digestive tract with no air in the rectum (Figures 1 and 2).

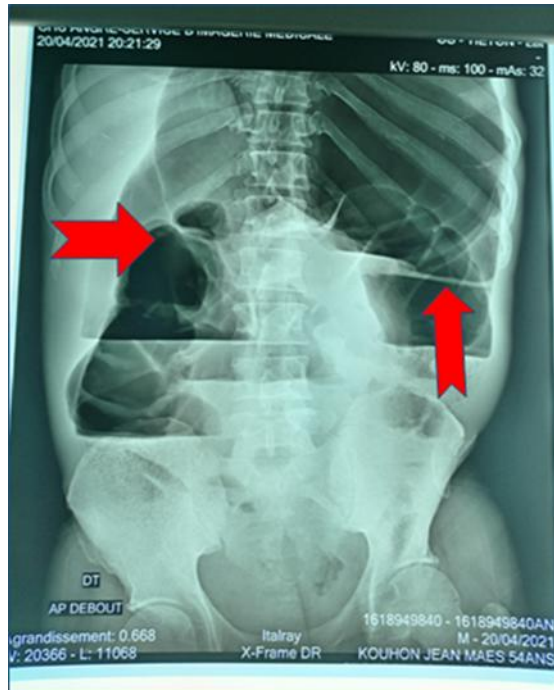


Figure 1: Superposition of a small number of colonic-type hydro-aeric levels. Image of the radiology service from Yopougon University Hospital

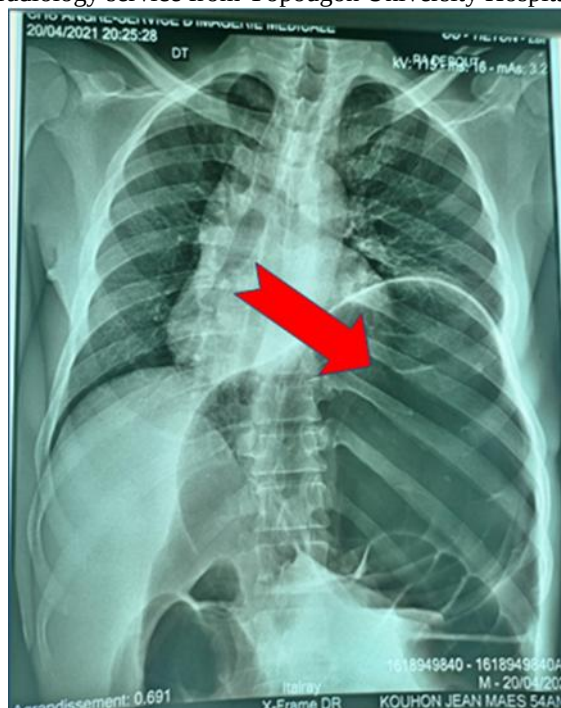


Figure 2: A large amount of bowel fluid below the left diaphragm, indicating significant distension of the left colic flexure. Image of the radiology service from Yopougon Hospital University

An abdominal computed tomography (CT) scan was not performed due to a lack of funding. Laboratory tests showed leukocytosis (51,880 cells/mm³), anemia (5.2 g/dL), a hematocrit of 17.2%, thrombocytopenia (85,000 cells/mm³), and a prothrombin time (PCT) of 62.03 ng/mL. Other findings included urea (0.33 g/L), creatinine (11 mg/L), sodium (139 mmol/L), potassium (3.8 mmol/L), and chloride (103 mmol/L).

Preoperative resuscitation measures consisted of:

- Insertion of two large-bore intravenous lines (18G and 20G)
- Fluid and electrolyte replacement
- Placement of a urinary catheter and a nasogastric tube
- Administration of dual antibiotic therapy (ceftriaxone 2g and metronidazole 500mg)
- Monitoring

We indicated the need for an exploratory laparotomy due to the clear diagnosis of intestinal obstruction by strangulation with probable loop necrosis.

The midline laparotomy, performed after an emergency pre-anesthetic consultation, revealed:

- Torsion of the left colic flexure around the spleen.
- The voluted loop involved the distal third of the transverse colon extending to the proximal portion of the descending colon.
- The left phrenicocolic ligament was absent.
- The proximal descending colon was intraperitoneal, with an absence of Toldt's fascia.
- The volvulus formed two counterclockwise turns around the mesentery, resulting in necrosis of the splenic angle without perforation (Figure 3).
- The ectopic spleen, located in the middle of the volvulus in the right flank, was healthy and slightly enlarged. The abdominal cavity was clean, and the spleen was viable (Figure 4).



Figure 3: Sigmoid colon twisted in a counterclockwise direction around the spleen, causing significant colonic distension. The spleen is viable with no signs of ischemia(Général Surgery of Yopougon Hospital University)



Figure 4: Intraoperative image of the volvulus showing the laceration of the distended colon, with areas of necrosis. Absence of perforation and local signs of infection

A failure of the posterior mesogastrium to adhere to the abdominal wall, with elongation of the splenic pedicle. The absence of the gastrosplenic and splenocolic omentum gives the spleen some freedom within the abdominal cavity (wandering spleen).

We performed a high segmental colectomy with splenic loop and end-to-end colocolic anastomosis using the Reybard technique, combined with splenopexy. Postoperative care consisted primarily of antibiotic therapy (ceftriaxone 2g/day IV and metronidazole 500mg/day by infusion) and analgesics (paracetamol 1g three times daily by infusion). The postoperative day 1 follow-up showed a regression of the leukocytosis to 32,800 cells/mm³, non-decompensated anemia (hemoglobin 7.7 g/dL), thrombocytopenia (73,000 cells/mm³), and hyperkalemia (5.26 mmol/L). He received an isogroup and isoRh transfusion of 450 mL of packed red blood cells (blood product unavailable), 6 IU of platelet concentrate, 20 mL of calcium gluconate, and 10 IU of insulin in 100 mL of 10% glucose solution. The patient resumed normal bowel function on postoperative day 3, as well as gradually resuming feeding, and the patient was discharged on day 6 to continue his local care on an outpatient basis.

Discussion

Colonic obstruction due to splenic angle volvulus is rare. The first case was described in 1954 by Buenger, with fewer than 100 cases reported in the literature (Amirsina 2021). In the literature, splenic angle volvulus occurs between the ages of 19 and 78, with a mean age of 48 years. Our patient was in this age range (54 years old). The etiology of colonic volvulus is multifactorial. Some factors are common to all locations of volvulus, such as chronic constipation, a high-fiber diet, frequent use of laxatives and enemas, a history of laparotomy, and an anatomical predisposition such as megacolon. However, some factors are specific to volvulus of fixed segments such as the splenic angle. Supporting tissues, such as the omental gastrocolic ligament, the phrenicocolic ligament, and Toldt's fascia, may be congenitally absent or surgically removed. These are specific risk factors for splenic angle torsion (Mc Garity 1966, Wolf 1956). For volvulus to occur, all these anatomical factors must be deficient, either congenitally or acquired (Gerbaud 2019). Our patient had a history of laparotomy for acute bowel obstruction 11 years prior, along with a history of chronic constipation, which could explain a failure of adhesions and postoperative adhesions leading to this torsion. Splenic involvement in volvulus is an exceptional event. The spleen is usually fixed in its fossa by the posterior mesogastrium and the sustentaculum lienis, which restrict its mobility. The clinical picture is typically dominated by the bowel obstruction, which was discovered incidentally during surgery. It would be the result of a wandering spleen (Yapo 2011). Several acquired or congenital

anatomical mechanisms have been described in the literature as being at the origin of the phenomenon of ectopic spleen (Daldouls 2015). This involves a failure of fusion of the dorsal mesogastrium or ligamentous laxity, resulting in ectopia or hypermobility of the so-called "wandering" spleen (Steinberg 2002, Yapo 2011). The spleen, found in an ectopic position due to this anatomical fixation anomaly combined with the failure of fixation of the more or less elevated colic angle, would be the cause of our clinical presentation (accidental involvement of the spleen during colonic rotation around its mesentery). This leads to a risk of ischemia and then splenic necrosis. In our case, the knot created by the volvulus was loose, which allowed the spleen to remain viable and non-necrotic. As in the literature, this involvement would be the result of a constitutional anatomical anomaly, primarily malformations (Hamidou 2016, Khalid 2012). Indeed, in our patient, the absence of the gastrosplenic and pancreaticosplenic omentum, as well as the left phrenicocolic and splenocolic ligaments, supports the congenital origin of this wandering spleen. Omata J et al. in Japan reported a gastric volvulus associated with a wandering spleen in a 43-year-old patient (Omata 2016). Any wandering spleen should be treated, even if discovered incidentally. Conservative treatment (splenopexy) should always be preferred. Splenectomy is indicated only in cases of splenic infarction (Germain 2018). In our observation, the healthy spleen was maintained in place by splenopexy within its fossa. However, urgent resection of the left colic flexure was indicated, as it was infarcted and necrotic without perforation. This was combined with an end-to-end anastomosis performed simultaneously using the Reybard technique (Brian 2023), with an uneventful postoperative course.

Conclusion

Volvulus of the splenic flexure is a rare cause of colonic obstruction, and its location around the spleen makes it exceptional. The rarity of this condition, as well as the scarcity of documentation in the current literature, necessitates bringing it to the attention of surgeons. Predisposing factors such as an unfixed colon and chronic constipation are among the risk factors. Computed tomography is used for diagnosis, but should in no case delay emergency surgery to avoid potential complications.

Author's contributions:

- Dr. Dah wrote the patient observation and contributed to their perioperative care.
- Dr. Assouhoun contributed to the writing of the article.
- Professor Koffi supervised and finalized the manuscript.

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Declaration for Human Participants: This study has been approved by Hôpital University of Yopougon (Abidjan, Côte d'Ivoire), in the General and Digestive Surgery Service, and the principles of the Helsinki Declaration were followed.

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